

Application No. 10/060,068
Reply to Office Action dated April 19, 2005

Amendments to the Drawings:

The attached sheets of drawings includes a new Figure 3A showing a top plan view of the device of Figure 3.

Attachment: New Sheet

REMARKS

Claims 13-20, 27-33, 35-40, and 55-66 will be pending upon entry of the present amendment. Claims 13, 16, 18, 27-30, and 38 are being amended. Claims 34 and 41-54 are being canceled. Claims 1-12 and 21-26 were previously canceled. Claims 55-66 are new. No new matter is being submitted.

The applicants and their attorney greatly appreciate the Examiner's time and courtesy in discussing the case with the applicants' attorney by telephone on July 14 and 15, 2005. The telephone conferences greatly helped the applicants to understand the Examiner's positions and allow this case to move forward. The applicants understand that the Examiner indicated that new claim 55 presented herein appeared to distinguish the invention from the prior art, but the Examiner would need to review the prior art again and possibly conduct a new search.

Claims 1-20 and 34-54 were rejected under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement. In particular, the Examiner objected to the use of the terms "spacing body" and "body region." Those terms have been removed from the current claims, which instead recite a "spacing region" as used in the specification.

Claims 13-18 and 27-30 were rejected under 35 U.S.C. § 102(b) as being anticipated by Chao et al. (5,633,535, hereafter "Chao"). Claims 19, 20, and 31 were rejected under 35 U.S.C. § 103 over Chao in view of Yew et al. (U.S. 6,137,164, hereafter "Yew"). Claims 32-40¹ have been rejected under 35 U.S.C. § 103 over Chao and Yew in view of Duboz et al. (U.S. 5,726,500, hereafter "Duboz").

As discussed during the telephone conference, a primary feature distinguishing at least one embodiment of the invention is the use of a single spacer region 21, 39 positioned between first and second bodies and defining a completely enclosed cavity that surrounds another region. The surrounded region can be a suspended active region 29 of an integrated electromechanical microsystem (MEMS) 1 (Figures 3 and 3A), a plug region 20 (Figs 1-5) or 38

¹ The Examiner inadvertently did not mention claims 39-40 with his rejection of claims 32-38 (page 6, lines 8-11), but claims 39-40 were discussed in that same section on page 7. Thus, the applicants are treating claims 39-40 as rejected based on Chao, Yew, and Duboz.

(Figs. 6-7), or an active region of an integrated microoptical electro-mechanical system (MOEMS) (see active region above lens 48 in Figs. 6-7). By defining a completely enclosed cavity between the two bodies, the integrated device 1 ensures sealing of the active regions and plug regions while enabling the two bodies to be self-aligned and welded together. In contrast to the single spacer region 21, 39, the primary prior art reference, Chao, shows only spacer pedestals 40 that do not define a completely enclosed cavity surrounding another region. Consequently, such pedestals 40 could not provide any sealing for either the solder joints 42 or any active region of a MEMS or MOEMS device.

New claim 55 is the main claim that was discussed during the telephone conference between the Examiner and the applicants' attorney on July 15. Claim 55 recites a single spacer region extending between the first and second bodies and including a completely enclosed first cavity that surrounds an active region of an electromechanical or optical microsystem. As discussed above, Chao does not disclose such a spacer region with a completely enclosed first cavity surrounding another region. Accordingly, claim 55 is not anticipated by Chao.

New claims 56-66 depend on claim 55, and thus, are also not anticipated by Chao. In addition, claim 56 further recites that the spacer region includes a completely enclosed second cavity in which an electrically conductive region is positioned. As discussed above, Chao does not disclose a spacer region that defines any completely enclosed cavities, and thus, Chao does not anticipate the invention recited in claim 56.

Independent claims 13 and 27 are being amended along the same lines as the text of claim 55. In particular, claim 13 is being amended to recite a unitary spacer region arranged near said electrically conductive region and extending between the first and second bodies, the spacer region including a completely enclosed first cavity surrounding an active region of the electromechanical or optical microsystem. Similarly, claim 27 is being amended to recite a spacer defining a completely enclosed first cavity that surrounds a connection structure forming an electrical connection between first and second metal regions. Accordingly, claims 13-18 and 27-30 are not anticipated by Chao for the reasons expressed above.

The combination of Chao and Yew does not teach or suggest the invention recited in claims 19, 20, and 31. Claims 19-20 and 31 depend on claims 13 and 27 respectively and thus respectively include the limitations of claims 13 and 27 discussed above. Yew is completely silent with respect to spacing regions or pedestals, and thus, cannot supply the teaching that are missing from Chao. Given that Yew is being cited only for its teaching of metal regions, there seems to be no need to discuss Yew in more detail with respect to the spacing region. Accordingly, claims 19-20 and 31 are not rendered obvious by the cited prior art.

The combination of Chao, Yew, and Duboz does not teach or suggest the invention recited in claims 32-40. Claims 32-40 depend on claim 27, and thus, include the limitations of claim 27 discussed above. Like Yew, Duboz is completely silent with respect to spacing regions or pedestals, and thus, cannot supply the teaching that are missing from Chao. Given that Duboz is being cited only for teaching of optical components², there seems to be no need to discuss Duboz in more detail with respect to the spacing region. Accordingly, claims 32-40 are not rendered obvious by the cited prior art.

Figure 3A is being filed herewith to more clearly show that the spacing region 21 surrounds the plug regions 22 and the active region 29, as requested by the Examiner. Support for the new Figure 3A can be found on pages 4-5, the original claims, and Figure 3.

During the telephone conferences, the Examiner inquired about the statement on page 5 lines 21-22 reciting that the plug region 20 completely surrounds active or micromechanical parts. That statement correctly describes one embodiment of the invention that is not shown in the drawings. Further, that statement does not detract from the ability of the spacer region 21 to completely surround both the plug region 20 and the active region 29 as shown in Figures 3 and 3A.

² The present amendment does not discuss the optical elements of claims 32-40 in detail because such a discussion would be a distraction from the primary focus of the invention. However, the applicants continue to submit that Duboz does not teach or suggest the claimed features attributed to it by the Examiner. Thus, if the Examiner continues to reject claims 32-40 based on Duboz, the applicants respectfully request that the Examiner identify the structures in Duboz thought to teach the features of claims 32-40.

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The applicants believe that the present amendment resolves all issues remaining in this case. If the Examiner discovers any further issues, the Examiner is respectively requested to contact Mr. Iannucci for a telephone conference.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

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RXI

Enclosure:

Postcard

1 New Sheet of Drawings (Figure 3A)

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